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ABSTRACT

This study investigated factors associated with absenteeism among nursing staff (N=219) at a long-term care facility. Four absenteeism measures were calculated from personnel records for each month of the year: no pay (the sum of unscheduled, unpaid sick, and leave without pay), part day (the sum of arrived late and left early), paid sick, and total. Analysis was undertaken on the arcsine transformed values to equalize variances. Independent variables were obtained from administrative records and included unit on which the nurse worked, whether or not the nurse was a registered nurse, part- or full-time status, shift, sex, marital status, number of tax exemptions, birth year, and year of employment. Absenteeism was found to be higher on one new unit than on other units, lower among registered nurses than among other nurses, lower among more senior nursing staff, and higher for employees with a greater number of exemptions taken. Absenteeism was also lower in the winter than at other times of the year. Seniority was the most important explanatory variable, but the effect was approximately linear. A hypothesized burnout pattern predicting that absenteeism would be low initially, would increase after one year, and would be low among nursing staff remaining for 2 years or longer was not found. (Author)

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# Characteristics of Absenteeism in Nursing Home Staff

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Running Head: CHARACTERISTICS OF ABSENTEEISM

This research was funded by a grant from the Aaron and Lillie Straus Foundation, Inc., and the Samuel R. Dweck Family Foundation

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Abstract

This study investigated factors associated with absenteeism among nursing staff at a long-term care facility. Four absenteeism measures were calculated from personnel records for each month of the year: no pay (the sum of unscheduled, unpaid sick, and leave without pay), part day (the sum of arrived late and left early), paid sick, and total. Analysis was undertaken on the arcsine transformed values to equalize variances. Independent variables were obtained from administrative records and included unit on which the nurse worked, whether or not the nurse was an RN, part/full time status, shift, sex, married or single, number of tax exemptions, birth year, and year of employment.

Absenteeism was higher on one new unit than on the others, was lower among RNs, was lower among more senior nursing staff, and was higher the greater the number of exemptions taken. Absenteeism was also lower in the winter than at other times. Seniority was the most important explanatory variable, but the effect was approximately linear - a hypothesized burnout pattern that predicted that absenteeism would be low initially, would increase after a year, and would be low among nursing staff remaining for 2 years or longer was not found.

This study investigated factors associated with absenteeism among nursing staff of a long-term care facility. First, the concept of absenteeism as well as findings of previous research are reviewed; then the present study is described.

## Absenteeism and Its Measurement

Absenteeism has been defined as "the failure to report on the job when the employer has no reason to expect that the employee will not be available at the specified time" (Cannavo, 1970, p. 11). Discussion of absence measures can be classified into how absence has been defined and how it is measured.

Several classifications have been used to define absence. Redfern (1978) distinguishes scheduled vs. unscheduled, short vs. long term, and certificated vs. uncertificated. Blau (1985) distinguishes unexcused, excused personal, excused sick family, and unexcused tardiness and finds that different variables affect each of the types of absence he identifies.

There are also many approaches to the measurement of absenteeism. Hackett and Guion (1985) identify the following measures: frequency, the number of absences in a time period; attitude, the number of absences during a period that last a single day; and time lost, the total number of days absent during a period. They find that time lost is the most reliable measure among a set of measures, none of which, they conclude, are very reliable.

Other approaches to measurement of absenteeism include co-worker ratings (Ivancevich, 1985); medical, i.e., the number of absences of three days or longer (Huse & Taylor, 1962); worst day, i.e., difference in the number of workers absent on worst and best days of week (Chadwick-Jones, Brown, Nicholson, & Sheppard, 1971); blue Monday, i.e., number of individuals absent

on Monday minus number of individuals absent on Friday (Chadwick-Jones et al., 1971).

The present research uses the proportion of days absent to available working days. It examines total absence as well as three conceptually distinct types of absence - no-pay, part-day, and paid-sick.

## The Findings of Previous Research

The current study used a limited number of independent variables because it relied exclusively on the system of records available at the institution. This review of previous research, therefore, discusses only those variables available to this study.

Variables available to this study fall into the first two categories identified as important by Redfern (1978):

- Personal/demographic characteristics - sex, age, marital status, and number of dependents
- Work-context variables - job title, full/part-time status, length of employment, shift, and unit on which the employee works.

No variables in Redfern's third category, external variables (e.g., travel to work, weather, and economic prosperity/recession), were available.

### Personal/Demographic Characteristics

Sex. The literature provides mixed results for the relationship between sex of employee and absenteeism. Muchinsky (1977) and Hackett and Guion (1985) report that absenteeism is greater among females than males. Redfern (1978), however, reports that the sex of an employee is not significant when other factors such as status and pay are controlled. Watson (1981) found that the direct effect of sex was not significant when other variables were controlled, but that the effects of other variables were significantly different for males and females. (That is, variables had different effects for males and females.)

Age. Age and absence are negatively related according to Hackett and Guion (1985), Nicholson, Brown, and Chadwick-Jones (1977), Redfern (1978), and Watson (1981).

Marital status. Redfern (1978) suggests that marital status does not have a significant effect for nursing staff, although married women in the work force in general take more time off. Hackett and Guion (1985) found that married men had greater absenteeism than single men. Blau (1985) found that married workers had greater excused sick family absence than single workers.

Number of dependents. Absenteeism in women increases with number of dependent children, according to Blau (1985), Franks (1972), Muchinsky (1977), Redfern (1978), and Tziner and Vardi (1984), because of increased demands on mothers by family members.

Work Context Variables

Job Level. Clarke and Hussey (1978) and Steers and Rhodes (1978) find that higher-level staff have lower absenteeism than lower-level staff, and Franks (1972) finds that absence decreases as earnings rise. Therefore, RNs can be expected to have a lower level of absenteeism than nursing assistants.

Full/part-time status. The effect of full-time status is unclear. Clarke and Hussey (1978) found that full-time workers take less sick leave than part-time workers. Blau (1985) found that workers for whom the job is not the primary source of income (many of whom are part-time workers) had greater unexcused tardiness. Redfern (1978), however, reported that full-time nursing staff have fewer spells of absence than part-time nursing staff, while Barr (1967) and Clark (1975) found no significant difference in absenteeism between full- and part-time nursing staff.

Length of employment. Franks (1972), Clarke and Hussey (1978), Nicholson et al. (1977), Redfern (1978), and Watson (1981) report that

absence falls with increased length of employment. Muchinsky (1977) reports that studies have mixed findings with respect to this relationship. Burnout theory (Maslach, 1982) suggests that the relationship between length of employment and absenteeism will show a peak in absenteeism after an initial period of lower absenteeism, and then be followed by a decline over time.

Shift. Redfern (1978) notes that, in industry, shift workers have lower absence rates than day workers, but that this may not be generalized to nursing staff because of the different nature of their work.

Unit. According to Redfern, a number of studies of nursing staff have found a difference in absence depending on the type of unit, but there is no systematic relation between absence and nursing specialty.

## Method

### Subjects

Two hundred and nineteen members of the nursing staff were randomly chosen from 8 of the 15 units of a 500-bed skilled nursing home in a large metropolitan area ) were employed during the 1985 calendar year were recruited for this study. Subjects of the study included members of all three nursing shifts.

The median age of the subjects was 37 years, with a range from 16 to 78 years. About 90 percent of the subject were female; about half were married; and about 90 percent were full-time employees. Characteristics of the subjects are summarized in Table 1.

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Insert Table 1 about here

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### Procedures

The independent variables were obtained from the administrative records for each member of the nursing staff: The unit on which the nurse worked;

the job title - coded to indicate whether or not the nurse was an RN, full/part-time employment status; shift - day, evening, night, or missing (includes floating shift); sex; marital status - coded as married or single; number of exemptions taken on the Federal W-4 form - an estimate of the number of dependents; date of birth; year employed - coded as 1981 or before, 1982, 1983, 1984 or after. In addition, monthly attendance information was obtained. The following categories provided by the Personnel Office were used as indicators of absenteeism in the study:

- Late
- Left early
- Absent (unscheduled)
- Paid sick leave
- Unpaid sick leave
- Leave without pay

Four measures of absenteeism were formed on the basis of these indicators:

- No Pay - the sum of absent (unscheduled), unpaid sick leave, and leave without pay
- Part Day - the sum of late and left early
- Paid Sick - paid sick leave
- Total absenteeism - total of the three measures.

Regression and analysis of variance using the demographic and work-construct independent variables discussed above were performed using a transformation of absenteeism as the dependent variable. The transformation procedure is outlined below:

1. The ratio of the number of days absent to the number of available working days was estimated in the following way:

- A series of numerators were calculated as the total number of days on which each nurse fell into each category of absenteeism for each month and for the year.
- A denominator for each month was calculated by taking the number of days in the month and multiplying by 5/7 (the proportion of working days in a week). The denominator for each nurse for the year was the sum over the months when the nurse was an employee.
- For part-time employees, the denominator was multiplied by 0.4, the proportion of full time that the modal part-time employee worked.

2. The ratio of each numerator to the appropriate denominator was transformed using the arcsine transformation (arcsine sqrt[p]). This transformation equalizes the variance of a proportion (Neter and Wasserman, 1974). The yearly or monthly transformed ratios were used in all analyses.

Analyses were performed twice: Once for all employees and once only for full-time employees. Ideally, analyses on full-time and part-time nursing staff would have been performed separately. However, since there were only 22 part-time nursing staff, the only possible approach was to use the data from all employees in one set of analyses and the data from only full-time employees in a second set, thereby clarifying the role of part-time status in the relationship between absenteeism and the independent variables.

Methods of analysis included one-way analysis of variance (for discrete variables) and simple regressions (for continuous variables) to estimate bivariate relationships among independent variables, repeated measures analysis of variance to estimate monthly effects, and multivariate analysis of variance and covariance to estimate multivariate models.

## Results

In the following discussion, the results for the univariate and multivariate analyses are briefly summarized, and then the results for individual variables are discussed. The analyses are for no-pay, part-day, paid-sick, and total absenteeism. These are analyzed separately for all subjects and for subjects who worked full time.

### Univariate Results

Univariate analyses included t-tests and analyses of variance to determine whether absenteeism rates were affected by the independent variables (shift, sex, seniority, etc.). A repeated measures analysis of variance was used to investigate in which months absenteeism rates were higher. The general pattern of univariate results is similar whether part-time nursing staff are included or excluded. Three variables failed to reach statistical significance in any of the eight univariate analyses: shift, sex, and marital status. Only seniority is significant in all eight analyses; month is significant in seven of the eight repeated-measures analyses. Unit and birth year are significant for all but the paid-sick analyses. The specific significant variables for each type of absence are presented in Table 2.

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Insert Table 2 about here

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### Multivariate Results

Starting with the variables that had significant univariate effects, variables were eliminated from the multivariate analyses, until all remaining variables were significant. Table 3 presents the variables that were included in the final models. Additionally, it presents the explained variance ($R^2$) for the following models: all variables significant in the

multivariate analysis, all variables near significant (if there were any) in the multivariate analysis, and all variables included in the initial multivariate analysis because they were significant in the univariate analyses. Explained variance ranged from 12.6 percent for total absence (21.0 percent with seniority included) to 41.2 percent for paid-sick absence.

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Insert Table 3 about here

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Variable by Variable Results

Sex. Sex was not a significant predictor of any measurement of absence, a result possibly due to the small number of men in the study (only 18 nursing staff were men).

Age. Age was a significant predictor of no-pay, part-day, and total absenteeism. The older the nurse, the lower the absenteeism. In multivariate analyses, age remained significant for part-day and total absence, and was near significance for no-pay absence.

Marital status. Marital status was not significant in any of the eight analyses.

Number of dependents. Number of exemptions, an estimate of the number of dependents, significantly affected the number of part-day absences. In addition, when part-time employees were included in the analysis (but not when they are excluded), number of exemptions affected total absence. The higher the number of exemptions, the greater the absence. Number of exemptions is significant in the multivariate analysis for total absence for all nursing staff, and near significant for part-day absence for all nursing staff.

Job level. Whether a nurse is an RN or not was significant in four of the eight analyses. In the analyses of all staff, RNs have lower part-day

and paid-sick absence, while for analyses with full-time staff only, they have significantly lower part-day and total absence. The variable remains significant in the multivariate analyses, except in the analysis of total absenteeism for full-time staff.

Part/full-time status. Part-time nursing staff were absent less than full-time nursing staff for no-pay and paid-sick absence. This is probably an effect of the organization's rules for paid absence - nursing staff who work less than half time are not eligible for sick leave. The variable remains significant in the multivariate analyses. Analyses excluding part-time nursing staff were very similar to those including part-time nursing staff, perhaps because there were only 22 part-time nursing staff in the study.

Length of employment. Length of employment was significant in all analyses, although the effect differed among types of absenteeism (but not according to whether part-time employees were included). Nurses with two years or more seniority had lower no-pay absence than more recent employees. Nurses hired in 1981 or before had lower part-day absence than those hired later. However, nursing staff hired before 1984 had higher paid-sick absence than those hired in 1984. (This probably reflects the fact that employees may not take paid sick leave during the first three months they are on staff.) The effect on total absence is similar to that for absence without pay. Length of employment remained significant in the multivariate analyses for no-pay and paid-sick absence, and attained near significance for total absence.

Shift. Shift is not significant in any of the eight analyses. However, data for shift were missing for about one-third of the nursing staff.

Unit. Unit was a significant variable for all but paid-sick absence. This is a result of a single new unit which had significantly higher absence

levels. Unit remained significant in the multivariate analysis for part-day absence when part-time workers were included, and for total absence.

Month. Month was significant in all analyses, except for no-pay absence when part-time nursing staff were included. Generally, December had the lowest rate of absence, with January and February tending to be low as well.

## Discussion

During 1984, the 191 nursing staff in the study who worked full time were absent an estimated 11 percent of the days.

The major finding of this study is the importance of seniority in explaining absenteeism. Seniority is particularly important as a variable because the turnover rate in many nursing homes is over 100 percent. Seniority was divided into four time spans because the effect on absence was expected to be non-linear. We tested the time effect - a hypothesis stemming from the concept of burnout - that absenteeism would peak among employees hired an intermediate period before, i.e., among those hired in 1983. This was not found for any of the measures. One reason for the null finding may be that burnout occurs after a relatively brief period in nursing homes and lasts a relatively long time.

Findings indicated that absenteeism was higher for more recently hired employees (except for paid-sick absence, which cannot, according to personnel rules, be high for new employees). The seniority variable explained a large amount of variance by itself - 16.4 percent for no-pay absence, 9.9 percent for part-day absence, 22.3 percent for paid-sick absence, and 7.9 percent for total absence.

Other important variables included age, number of dependents, job level, unit, full/part-time status, and month. Age, number of exemptions, and job level proved consistent with theoretical expectations: older nursing staff, nursing staff with fewer dependents, and RNs had lower levels of absenteeism.

The effect for unit was the result of one of the eight units having a much higher level of absenteeism than the others.

The effect for full/part time, as noted in the "Results" section, is probably explained by personnel rules. With only 22 part-time nursing staff, it was not possible to undertake analyses on only part-time workers. When part-time nursing staff were excluded from the analyses, the results were generally about the same as when they were included.

Results showed, in general, that the lowest absenteeism occurred during December, followed by February and January. This pattern may be accounted for in terms of fewer competing activities during the winter months than during other times of the year.

Overall, it appears that seniority is the most important predictor of absence. The longer a nurse has been on staff, the less likely he/she is to be absent from work.

Four measures of absenteeism that reflect different aspects of nursing staff' absence were used in the present study. Part-day absence may be seen as an attitudinal measure, generally reflecting whether a nurse is prompt and places high priority on work; however, it may also reflect other important responsibilities, such as child care. Paid-sick absence partially reflects seniority in that the nursing home allows paid sick leave only after 3 months of employment; additionally, paid sick leave is possible only after the leave is accumulated. Unpaid leave reflects the opposite of paid-sick leave. Those who are sick but have no leave need to take leave without pay. Total leave is a global measure, being the sum of these three categories.

The findings from the current study show that total leave is most strongly predicted by a nurse's seniority. This suggests that nursing homes need to emphasisize retaining their nursing staff over a long period of time.

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TABLE 1: DESCRIPTION OF VARIABLES*

A. Absenteeism Variables

| Variable | Mean | S.D. | Min | Max |
|---|---|---|---|---|
| Ratio of absences to days available (P) | | | | |
| No-pay | 0.03 | 0.07 | 0 | 0.57 |
| Part-day | 0.04 | 0.05 | 0 | 0.28 |
| Paid-sick | 0.04 | 0.03 | 0 | 0.15 |
| Total | 0.11 | 0.10 | 0 | 0.76 |
| Arcsine Sqrt (P) | | | | |
| No-pay | 0.13 | 0.15 | 0 | 0.85 |
| Part-day | 0.17 | 0.12 | 0 | 0.56 |
| Paid-sick | 0.17 | 0.09 | 0 | 0.40 |
| Total | 0.31 | 0.14 | 0 | 1.06 |

B. Sample Demographic Characteristics

| Variable | Code | Count |
|---|---|---|
| Sex | Female | 176 |
| | Male | 18 |
| Marital status | Single | 101 |
| | Married | 101 |
| RN or not | Yes | 21 |
| | No | 193 |
| Full/part time | FT | 191 |
| | PT | 22 |
| Shift | Day | 62 |
| | Evening | 44 |
| | Night | 38 |
| Seniority (hire year) | Before 1982 | 94 |
| | 1982 | 27 |
| | 1983 | 40 |
| | 1984 | 51 |
| Unit | 1-8 | 11-35 |

| Variable | Mean | S.D. | N |
|---|---|---|---|
| Age | 40.88 | 12.33 | 211 |
| Number of exemptions | 1.53 | 1.64 | 209 |

* Total sample size is 219. Where categories do not sum this number, the balance of the cases are missing.

TABLE 2: UNIVARIATE SIGNIFICANCE TESTS

| | Absenteeism | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | All Nurses | | | | Full-Time Nurses | | | |
| Variable | No Pay | Part Day | Paid Sick | Total | No Pay | Part Day | Paid Sick | Total |
| Unit[1] | .037 | .001 | NS | .027 | .017 | .028 | NS | .029 |
| RN[2] | NS | .000 | .011 | NS | NS | .000 | NS | .006 |
| Full/part time[3] | .006 | NS | .000 | NS | -- | -- | -- | -- |
| Shift | NS | NS | NS | NS | NS | NS | NS | NS |
| Sex | NS | NS | NS | NS | NS | NS | NS | NS |
| Marital status | NS | NS | NS | NS | NS | NS | NS | NS |
| Seniority[4] | .000 | .000 | .000 | .001 | .001 | .000 | .000 | .000 |
| Birth year[5] | .000 | .000 | NS | .000 | .000 | .000 | NS | .000 |
| Number of exemptions[6] | NS | .003 | NS | .015 | NS | .036 | NS | NS |
| Month[7] | NS | .000 | .001 | .000 | .031 | .000 | .000 | .000 |

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Cells contain probability of obtaining differences by chance, by ANOVA or regression.

NS - probability less than .050.

1. One new unit had significantly greater levels of absence.
2. RN's had lower absence.
3. A higher absence was manifested for full-time nurses.
4. Senior nurses had lower absenteeism (with the exception of paid-sick).
5. Younger nurses had higher rates of absenteeism.
6. Nurses with more exemptions had higher rates of absenteeism.
7. Absence was generally lowest in the winter months.

TABLE 3: VARIABLES SIGNIFICANT IN MULTIVARIATE ANALYSES

| All Nurses | $R^2$ | Full-Time Nurses | $R^2$ |
|---|---|---|---|
| **No-Pay Absence** | | | |
| Full/part time | | Seniority | |
| Seniority | .202 | Birth year | .262 |
| (Birth year | .220) | | |
| All | .255 | All | .306 |
| **Part-Day Absence** | | | |
| Unit | | RN | |
| RN | | Birth year | .192 |
| Birth year | .258 | | |
| (Number of exemptions | .271) | | |
| All | .283 | All | .216 |
| **Paid-Sick Absence** | | | |
| RN | | Seniority | .317 (All) |
| Full/part time | | | |
| Seniority | .412 (All) | | |
| **Total Absence** | | | |
| Unit | | Unit | |
| Birth year | | Birth year | .225 |
| Number of exemptions | .126 | | |
| (Seniority | .210) (All) | (Seniority | .252) |
| | | All | .259 |

The first $R^2$ value under each type of absenteeism is for the model that includes only significant variables. Variables in parenthesis were near significant ($p<.10$) and the $R^2$ value in parenthesis is for the model that includes these variables in addition to significant variables. The word "All" refers to the model containing all variables that were significant in the univariate analyses and an $R^2$ is provided for this model, as well. Dashed lines divide the different models, with variables listed above the line included in all models below the line.